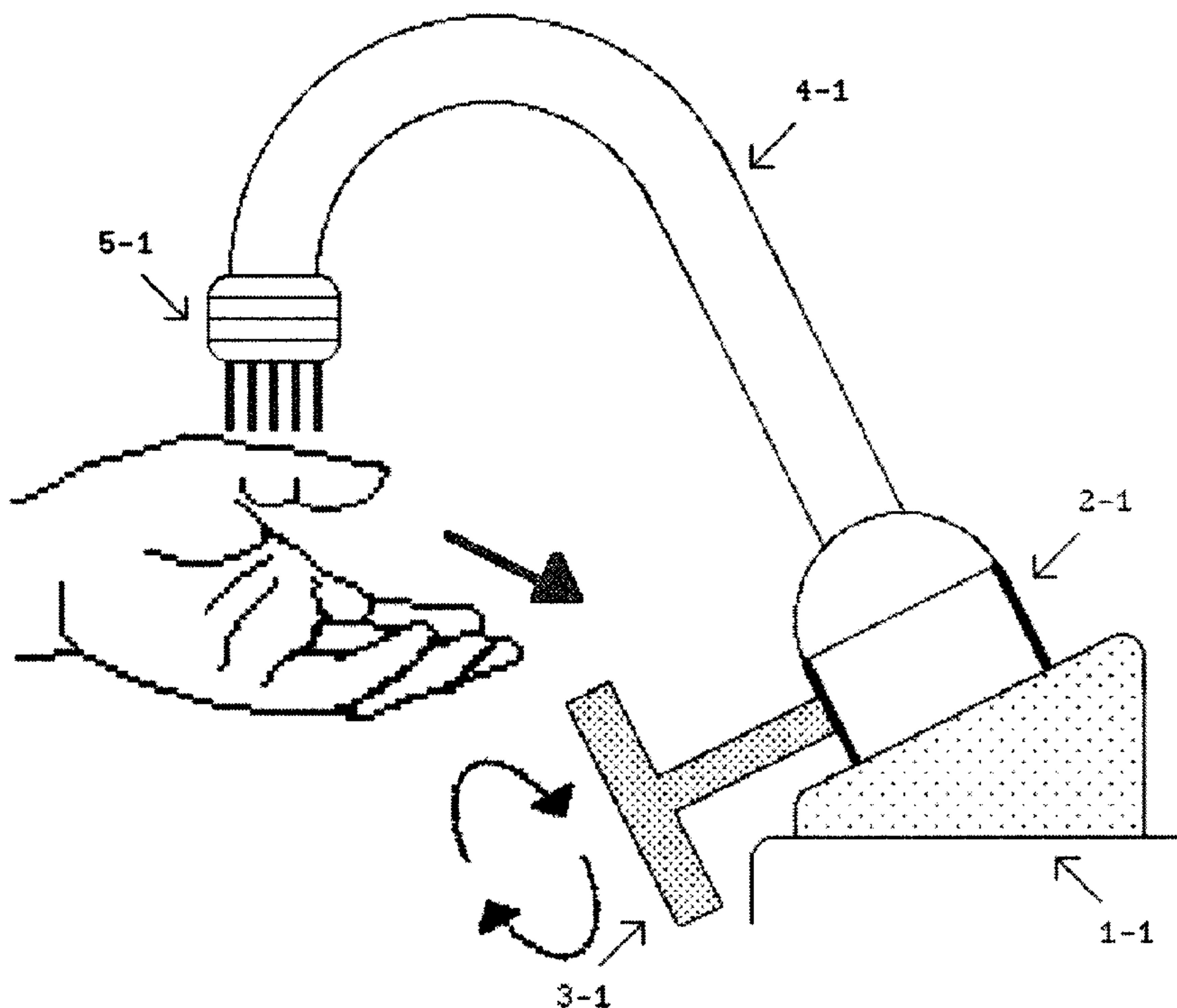




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(54) Title: SANITARY SINGLE-HANDLE WATER FAUCET



(57) **Abrégé/Abstract:**

• A single-handle water faucet comprises a hollow base which mounts on the top-back portion of a sink, a valve assembly, a handle for controlling the flow rate of water and the temperature mix of water, a spout securely attached to the valve assembly and extending upwardly from the top end of the valve assembly, and a nozzle for discharging water. The handle is positioned below the nozzle so that the water discharged from the nozzle can be directed to the handle and sprayed onto the handle by hand in order to facilitate the cleaning of the handle during a hand-wash session. In one embodiment of the invention, the handle is axially rotatable. In another embodiment of the invention, the handle is pivotally movable. This invention relates to water faucets, and the principal use of the invention is for bathrooms, kitchens and lavatories.

**Abstract**

- A single-handle water faucet comprises a hollow base which mounts on the top-back portion of a sink, a valve assembly, a handle for controlling the flow rate of water and the temperature mix of water, a spout securely attached to the valve assembly and extending upwardly from the top end of the valve assembly, and a nozzle for discharging water. The handle is positioned below the nozzle so that the water discharged from the nozzle can be directed to the handle and sprayed onto the handle by hand in order to facilitate the cleaning of the handle during a hand-wash session. In one embodiment of the invention, the handle is axially rotatable. In another embodiment of the invention, the handle is pivotally movable. This invention relates to water faucets, and the principal use of the invention is for bathrooms, kitchens and lavatories.

## **Description**

### **Title**

- **Sanitary Single-Handle Water Faucet**

### **Technical Field**

- This invention relates to water faucets, more particularly to a single-handle water faucet for bathrooms, kitchens and lavatories.

### **Background Art**

- There are many instances where it would be desirable to be able to easily wash the handle of a single-handle water faucet during a hand-wash session in order to remove contaminants such as chemicals, dirt, germs and microbes from the handle, and to avoid re-contamination by touching the handle at the end of a hand-wash session.
- A number of utility and design patents disclose sanitary water faucets.
- Both a push-button type self-closing water faucet and a foot-operated water faucet allow a person to wash his/her hands without touching the handle at the end of a hand-wash session. However, they generally do not have control over the timing of the water flow or the temperature mix of water.
- An electronic water faucet with an infrared sensor for on/off control also allows a person to wash his/her hands without touching the handle at the end of a hand-wash session. However, it does not have control over the flow rate of water, and it requires an electrical power source.
- **U.S. Patent 5 711 329** discloses "Self-cleaning knob water faucet". This prior art has a water showering apparatus which showers water on the knob when the water valve assembly is in the open position of the water valve assembly. However, it requires separate water flows for cleaning the knobs.
- These prior art arrangements do not have a handle positioned below a nozzle so that the water discharged from the nozzle can be directed to the handle and sprayed onto the handle by hand in order to facilitate the cleaning of the handle during a hand-wash session.

### **Description of the Invention**

- It is a primary object of the invention to provide a sanitary single-handle water faucet for bathrooms, kitchens and

lavatories.

- It is another object of the invention to provide a single-handle water faucet that facilitates the cleaning of the handle during a hand-wash session.
- It is another object of the invention to provide a single-handle water faucet that does not require electrical power or separate water flows.
- A single-handle water faucet comprises a hollow base which mounts on the top-back portion of a sink, a valve assembly, a handle for controlling the flow rate of water and the temperature mix of water, a spout securely attached to the valve assembly and extending upwardly from the top end of the valve assembly, and a nozzle for discharging water. The handle is positioned below the nozzle so that the water discharged from the nozzle can be directed to the handle and sprayed onto the handle by hand in order to facilitate the cleaning of the handle during a hand-wash session. In one embodiment of the invention, the handle is axially rotatable. In another embodiment of the invention, the handle is pivotally movable.

#### **Brief Description of the Figures in the Drawings**

- In drawings which illustrate embodiments of the invention:
  - **Figure 1** marked "**Prior Art**" is a side view of a conventional single-handle water faucet;
  - **Figure 2** marked "**Prior Art**" is a front view of the conventional single-handle water faucet of **Figure 1**;
  - **Figure 3** is a side view of one embodiment of a single-handle water faucet according to the invention;
  - **Figure 4** is a front view of the single-handle water faucet of **Figure 3**;
  - **Figure 5** is a side view of another embodiment of a single-handle water faucet according to the invention;
  - **Figure 6** is a front view of the single-handle water faucet of **Figure 5**;
  - **Figure 7** is a side view of another embodiment of a single-handle water faucet according to the invention; and
  - **Figure 8** is a front view of the single-handle water faucet of **Figure 7**.

#### **Modes for Carrying Out the Invention**

- In one conventional single-handle water faucet shown in **Figure 1** and **Figure 2** marked "Prior Art", a hollow base 1-0 mounts on the top-back portion of a sink. A spout 4-0 extends upwardly from the top end of the hollow base 1-0. A nozzle 5-0 is securely attached to the distal end of the spout 4-0. A valve assembly 2-0 for setting the flow rate of water and the temperature mix of water is securely mounted on the spout 4-0. A handle 3-0 for controlling the flow rate of water and the temperature mix of water is operably attached to the top of the valve assembly 2-0.
- The single-handle water faucet may further comprise an aerator, securely attached to the interior of the nozzle 5-0.
- According to the prior art, the handle 3-0 is positioned above the nozzle 5-0 so that the water discharged from the nozzle 5-0 can not be easily directed to the handle 3-0.
- In one embodiment of the invention shown in **Figure 3** and **Figure 4**, a single-handle water faucet comprises a hollow base 1-1, a valve assembly 2-1 for setting the flow rate of water and the temperature mix of water, a handle 3-1 for controlling the flow rate of water and the temperature mix of water, a spout 4-1, and a nozzle 5-1 for discharging water.
- The hollow base 1-1 mounts on the top-back portion of a sink. The valve assembly 2-1 is securely mounted on the hollow base 1-1, and comprises an inlet port for hot water, an inlet port for cold water, and an outlet port for mixed water. The proximate end of the handle 3-1 is operably attached to the valve assembly 2-1. The spout 4-1 is securely attached to the valve assembly 2-1 and extends upwardly from the top end of the valve assembly 2-1. The spout 4-1 has fluid communication with the outlet port of the valve assembly 2-1. The nozzle 5-1 is securely attached to the distal end of the spout 4-1, and has fluid communication with the spout 4-1.
- The single-handle water faucet may further comprise an aerator, securely attached to the interior of the nozzle 5-1.
- According to the present invention, the handle 3-1 is positioned below the nozzle 5-1 so that the water discharged from the nozzle 5-1 can be directed to the handle 3-1 and sprayed onto the handle 3-1 by hand in order to facilitate the cleaning of the handle 3-1 during a hand-wash session, as shown in the figures.
- The hollow base 1-1 may be forwardly inclined toward the front portion of the sink at an angle substantially between  $\pi/3$  radian (30 degrees) and  $2\pi/3$  radian (60 degrees) in order for the splashed water on the surface of the hollow base 1-1 to escape directly into the sink.
- The spout 4-1 may be J-shaped. The cross section of the spout

4-1 may be circular or elliptical.

- The handle 3-1 is axially rotatable in order to control the flow rate of water or the temperature mix of water, as indicated by the arrow in **Figure 3**. The distal end of the handle 3-1 is rotatable around the valve assembly in order to control the temperature mix of water or the flow rate of water, as indicated by the arrow in **Figure 4**.
- The distal end of the handle 3-1 may be of any shape, i.e., ellipsoidal, semi-spherical, circular disc, hexagonal disc, triangular disc, etc. The position of the handle 3-1 provides memory of the temperature mix of water.
- In another embodiment of the invention shown in **Figure 5** and **Figure 6**, the handle 3-2 is pivotally movable around the valve assembly in order to control the flow rate of water and the temperature mix of water, as indicated by the arrows in the figures.
- The distal end of the handle 3-2 may be of any shape, i.e., ellipsoidal, semi-spherical, circular disc, hexagonal disc, triangular disc, etc. The position of the handle 3-2 provides memory of the temperature mix of water.
- In another embodiment of the invention shown in **Figure 7** and **Figure 8**, the handle 3-3 is pivotally movable around the valve assembly in order to control the flow rate of water and the temperature mix of water, as indicated by the arrows in the figures.
- The handle 3-3 is U-shaped and spans from the left side of the valve assembly 2-1 to the right side of the valve assembly 2-1. The position of the handle 3-3 provides memory of the temperature mix of water.

## Claims

- The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A single-handle water faucet, comprising:

- a hollow base which mounts on the top-back portion of a sink;
- a valve assembly for setting the flow rate of water and the temperature mix of water, the valve assembly securely mounted on the hollow base, the valve assembly comprising:
  - an inlet port for hot water;
  - an inlet port for cold water; and
  - an outlet port for mixed water;
- a handle for controlling the flow rate of water and the temperature mix of water, the handle having a proximate end and a distal end, the proximate end of the handle operably attached to the valve assembly;
- a spout securely attached to the valve assembly and extending upwardly from the top end of the valve assembly, the spout having fluid communication with the outlet port of the valve assembly; and
- a nozzle for discharging water, the nozzle securely attached to the distal end of the spout, the nozzle having fluid communication with the spout;

the hollow base forwardly inclined toward the front portion of the sink at an angle substantially between  $\pi/3$  radian (30 degrees) and  $2\pi/3$  radian (60 degrees) in order for the splashed water on the surface of the hollow base to escape directly into the sink, the handle positioned below the nozzle so that the water discharged from the nozzle can be re-directed to the handle and sprayed onto the handle by hand in order to allow the cleaning of the handle with the amount of re-directed water during a hand-wash session.

2. A single-handle water faucet as defined in claim 1, further comprising:

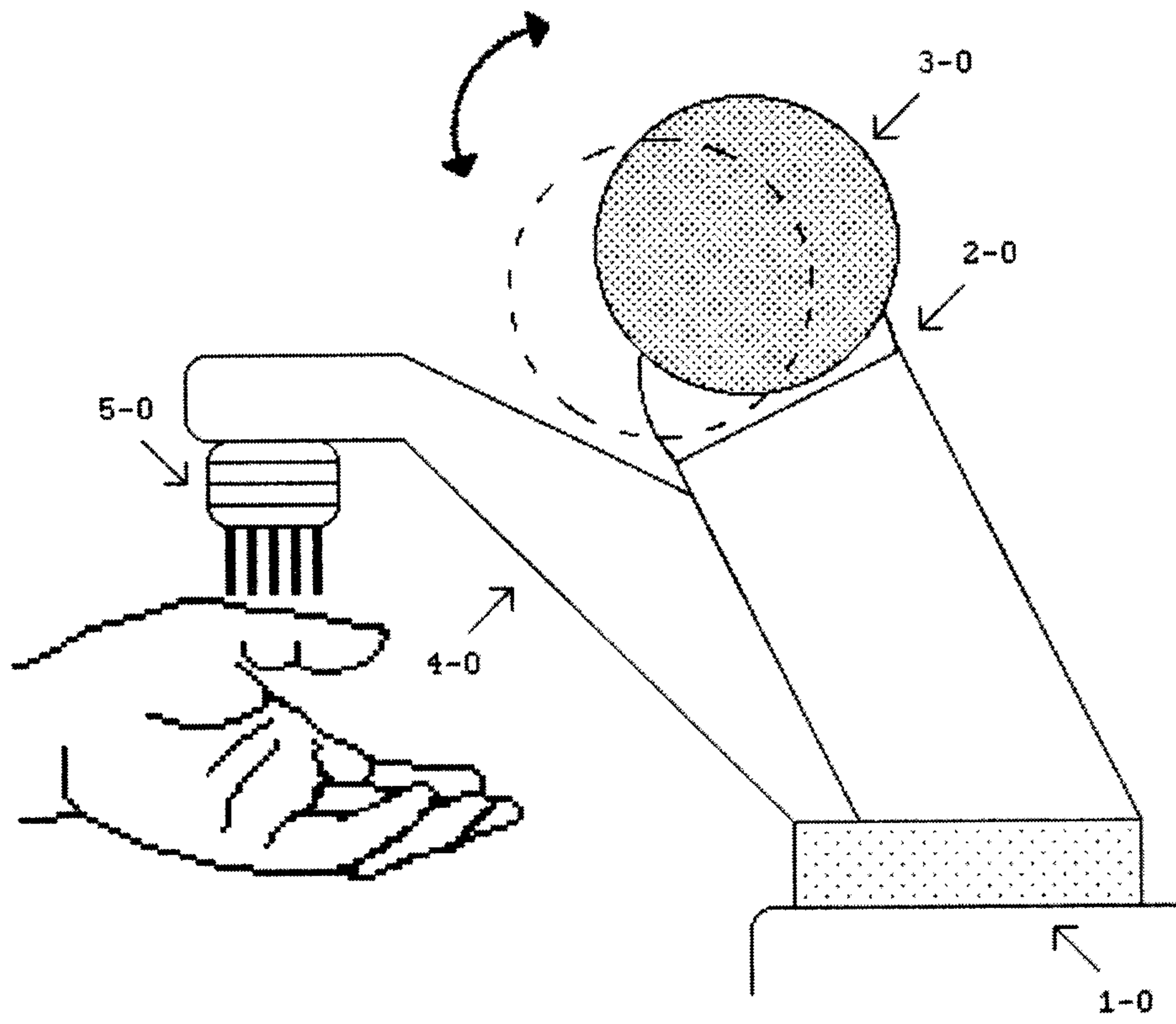
- an aerator securely attached to the interior of the nozzle.

3. A single-handle water faucet as defined in claim 1, in which the handle is axially rotatable in order to control the flow rate of water, and the handle is rotatable around the valve

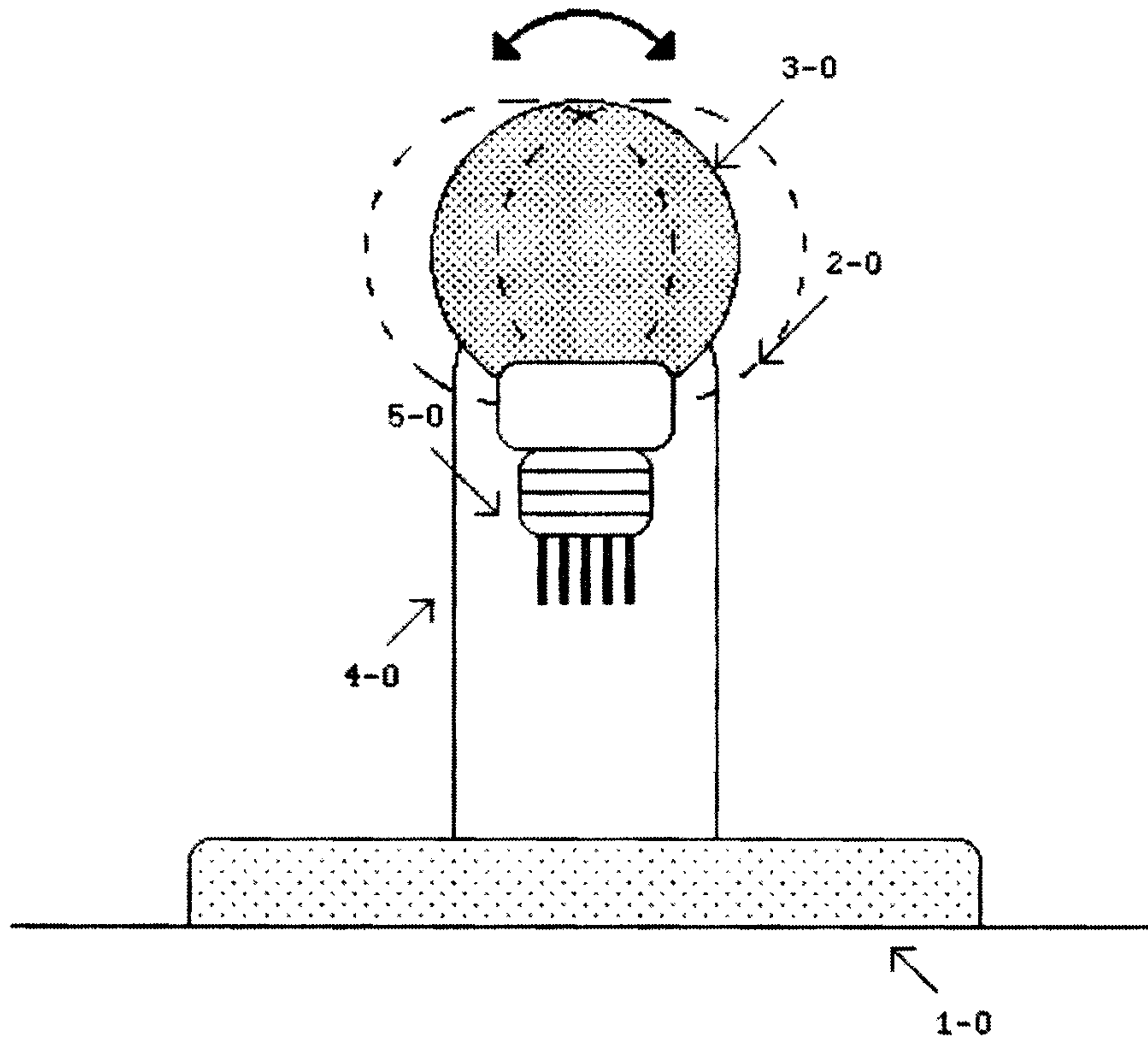
assembly in order to control the temperature mix of water.

4. A single-handle water faucet as defined in claim 1, in which the handle is axially rotatable in order to control the temperature mix of water, and the handle is rotatable around the valve assembly in order to control the flow rate of water.
5. A single-handle water faucet as defined in claim 1, in which the handle is pivotally movable around the valve assembly in order to control the flow rate of water and the temperature mix of water.
6. A single-handle water faucet as defined in claim 5, in which the handle is U-shaped and spans from the left side of the valve assembly to the right side of the valve assembly.

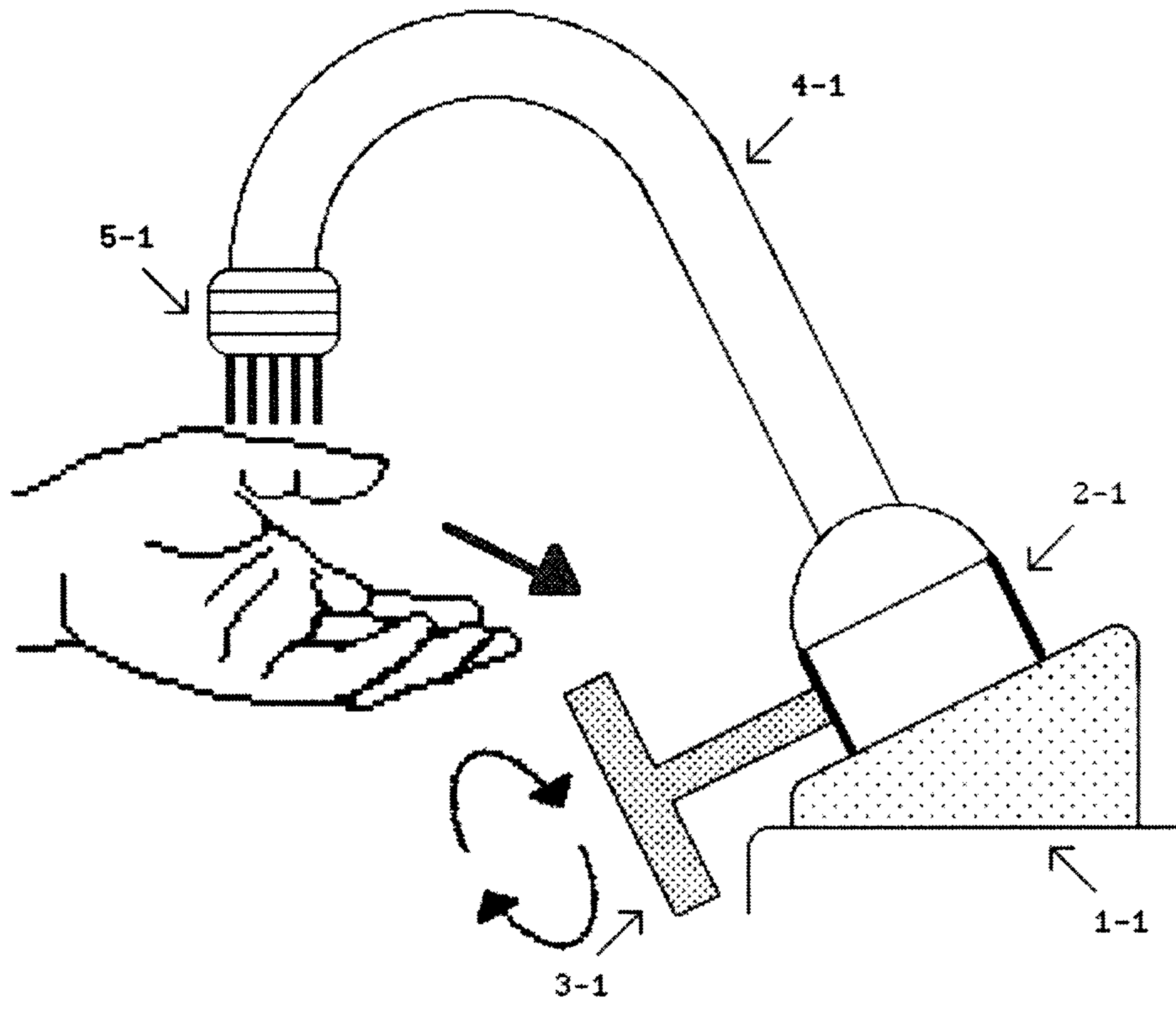
**Figure 1 (Prior Art)**



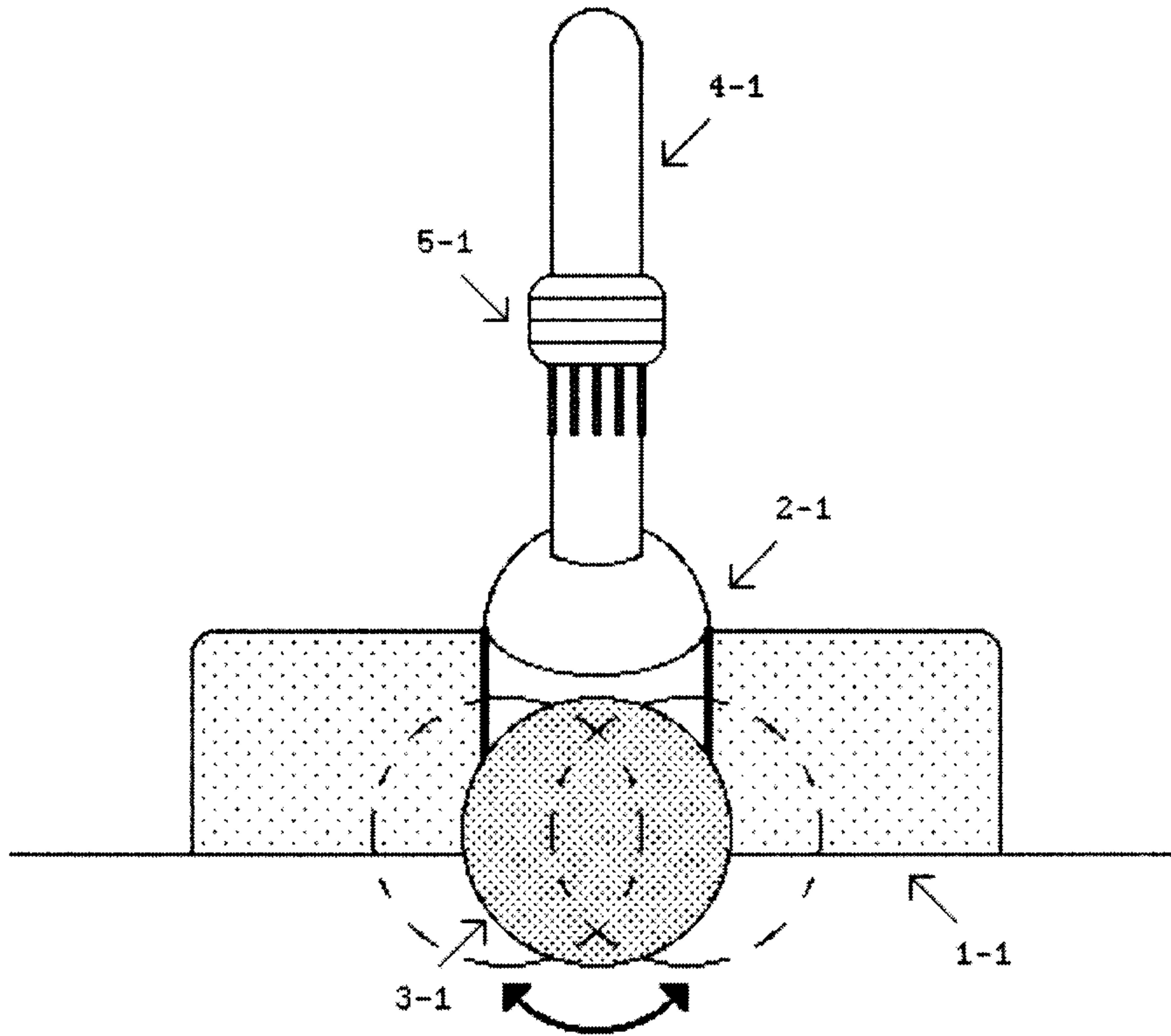
**Figure 2 (Prior Art)**



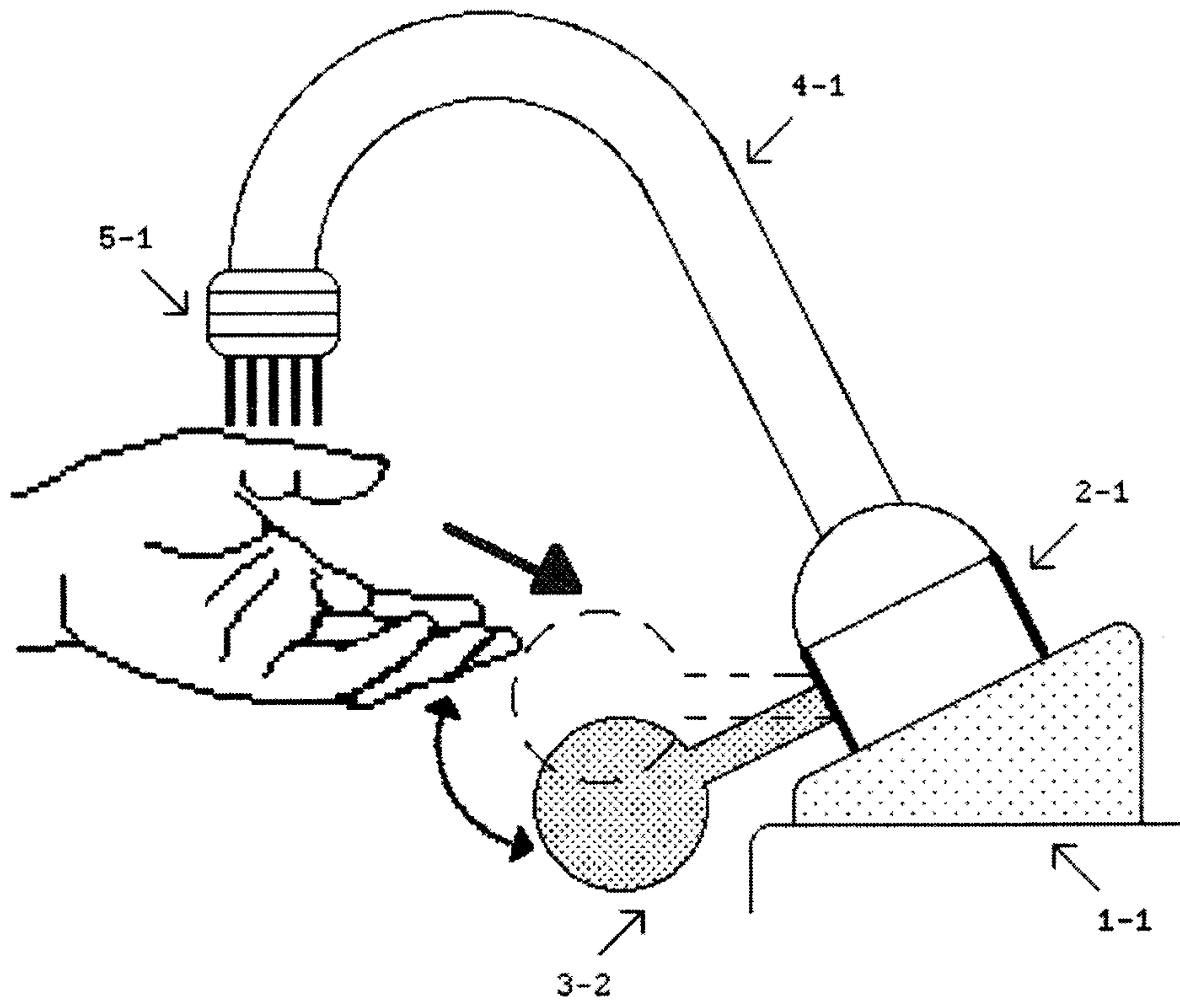
**Figure 3**



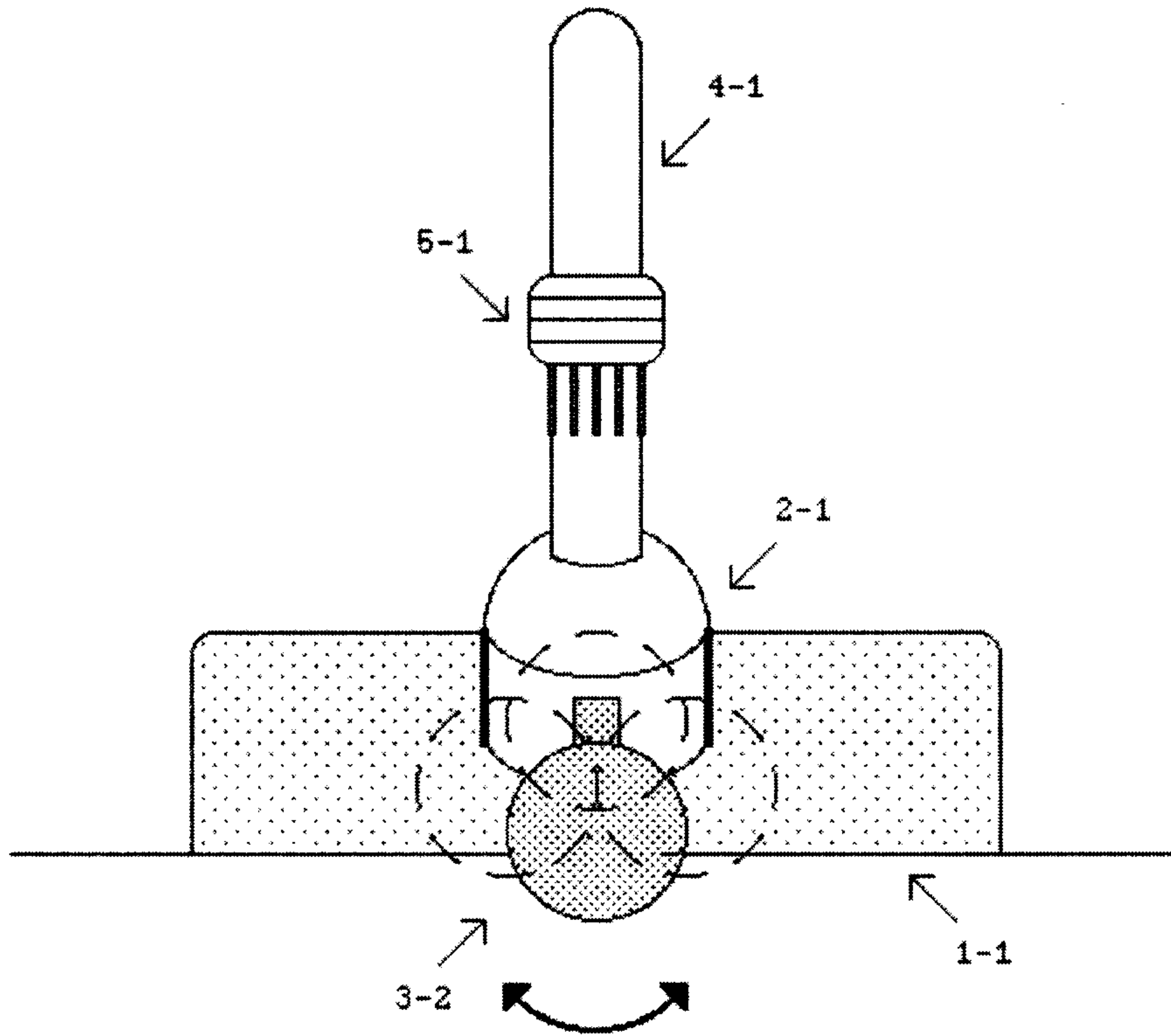
**Figure 4**



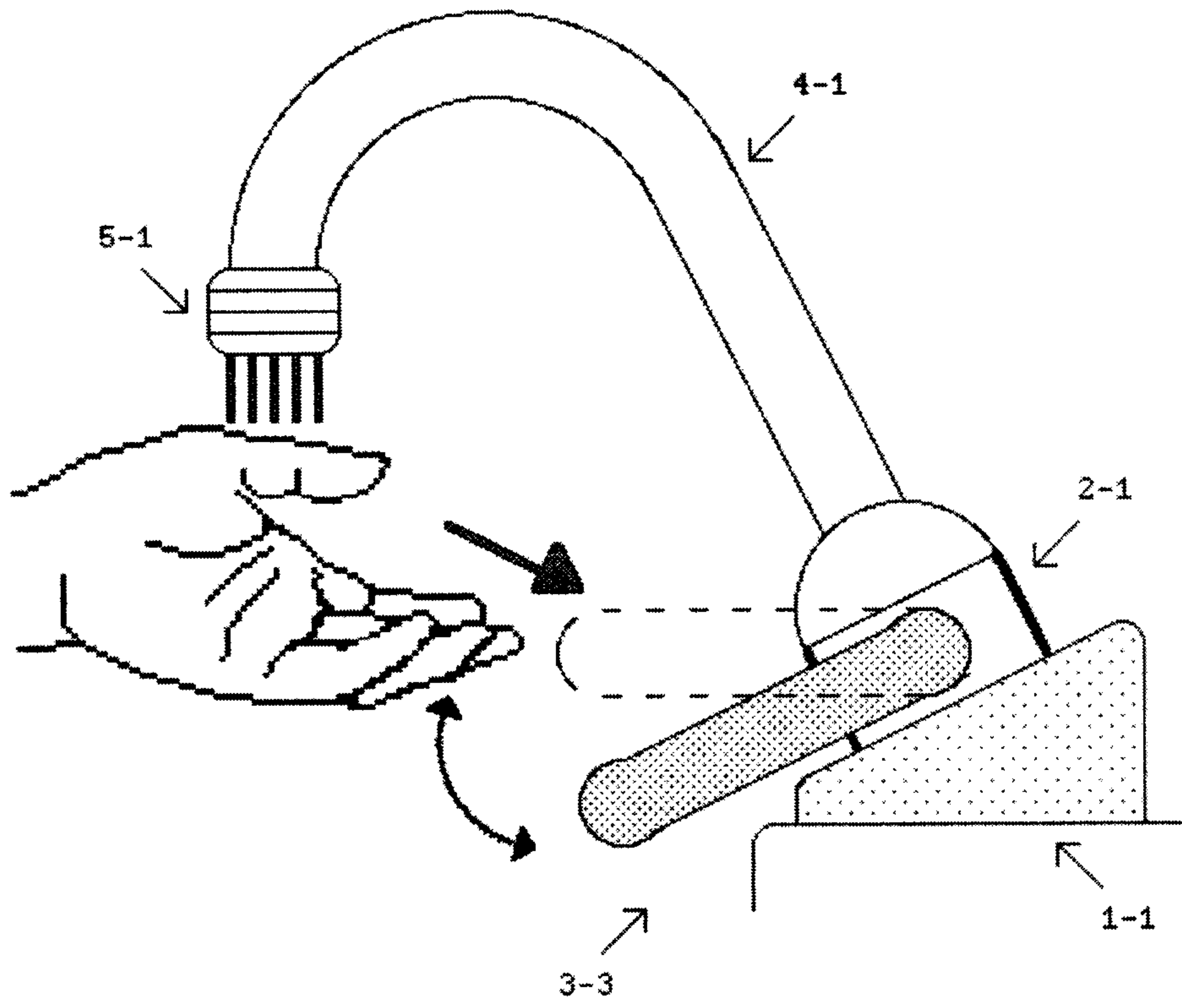
**Figure 5**



**Figure 6**



**Figure 7**



**Figure 8**

